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EXAMINER

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ART UNIT PAPER NUMBER

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Please find below and/or attached an Office communication concerning this application or proceeding.



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**BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES**

Application Number: 09/730,238
Filing Date: December 05, 2000
Appellant(s): LEETE, BRIAN A.

Robert E. Mates (Reg. No. 35,271)
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed on 11th of March 2005 appealing from the Office action mailed on 8th of September 2004.

Art Unit: 2112

(1) *Real Party in Interest*

A statement identifying the real party in interest is contained in the brief.

(2) *Related Appeals and Interferences*

A statement identifying no related appeals and interferences which will directly affect or be directly affected by or have a bearing on the decision in the pending appeal is contained in the brief.

(3) *Status of Claims*

The statement of the status of the claims contained in the brief is correct.

(4) *Status of Amendments After Final*

No amendment after final has been filed.

(5) *Summary of Claimed Subject Matter*

The summary of invention contained in the brief is correct.

(6) *Grounds of Rejection to be Reviewed on Appeal*

The appellant's statement of the issues in the brief is correct.

(7) *Claims Appendix*

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) *Evidence Relied Upon*

The following is a listing of the evidence (e.g., patents, publications, Official Notice, and admitted prior art) relied upon in the rejection of claims under appeal.

USB Specification published by Compaq, Intel, Microsoft, and NEC, Rev 1.1, Sep. 1998

| | | |
|-----------------|--------------|---------|
| US 6,701,192 B1 | Herwig | 03-2004 |
| US 5,799,196 A | Flannery | 08-1998 |
| US 6,272,644 B1 | Urade et al. | 08-2001 |
| US 6,253,329 B1 | Kang | 06-2001 |
| US 6,283,789 B1 | Tsai | 09-2001 |

Art Unit: 2112

| | | |
|-----------------|------------------|---------|
| US 5,781,028 A | Decuir | 07-1998 |
| US 6,446,867 B1 | Sanchez | 09-2002 |
| US 6,370,603 B1 | Silverman et al. | 04-2002 |

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claims 1-4, 7, 11, 12, 16, 17, 19, 28-32, 39 and 41-43 are rejected under 35 U.S.C. 103(a) as being unpatentable over Herwig [US 6,701,192 B1] in view of Flannery [US 5,799,196 A].

Referring to claim 1, Herwig discloses an apparatus (i.e., wiring Hub 100 of Fig. 3), comprising:

- a housing (i.e., housing 110 of Fig. 3);
- a power supply (i.e., Power Supply 112 of Fig. 3) enclosed in said housing (See Fig. 3);
- a bus hub (i.e., Protocol Conversion & USB Hub 114 of Fig. 3) enclosed in said housing (See Fig. 3); and
- a downstream receptacle (i.e., cable connector between lines 136, 138 and lines 90, 94 in Fig. 3) connected to both said power supply and said bus hub (i.e., line 138 connected to Power Supply 112 and line 136 connected to Protocol Conversion & USB Hub 114 in Fig. 3),
 - said downstream receptacle being coupled to a cable (i.e., line 136 and line 138 in Fig. 3) to couple power from said power supply (See col. 6, lines 65-66) and data signals from said bus hub to said cable (See col. 7, lines 11-15) and to receive power and data signals from said cable (See col. 6, line 65 through col. 7, line 10).

Herwig does not expressly teach said power supply being coupled to said bus hub to supply power to said bus hub.

Flannery discloses an apparatus of providing power management using a self-powered USB device (See Abstract and Fig. 1A), wherein said apparatus comprising

Art Unit: 2112

- a power logic 114 (Fig. 1A) and a power supply (i.e., power supply 108 of Fig. 1A) being coupled to a bus hub (i.e., HUB Logic 106 of Fig. 1) to supply power to said bus hub (See col. 5, line 65 through col. 6, line 11).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have included said apparatus of providing power management, as disclosed by Flannery, to said apparatus, as disclosed by Herwig, so as to provide a superior solution to supplying the power needs of suspend/resume capabilities in a computer without the inefficiencies of a dual-stage power supply unit or the expense of incorporating both low-power and full-power units (See Flannery, col. 2, line 62 through col. 3, line 2) with the advantage of being able to supply 500mA to each downstream device (e.g., printers and speakers) attached to said bus hub (See Flannery, col. 4, lines 50-64).

Referring to claim 2, Herwig teaches

- said bus hub (i.e., Protocol Conversion & USB Hub 114 of Fig. 3) comprises an upstream port (i.e., port from Protocol Conversion & USB Hub 114 for line 136 in Fig. 3).

Referring to claim 3, Herwig teaches

- said bus hub (i.e., Protocol Conversion & USB Hub 114 of Fig. 3) comprises at least one downstream port (i.e., USB Port #1 140 and USB Port #2 142 in Fig. 3) to connect to at least one downstream device (e.g., Scanner 66 and POS Keyboard 62 in Fig. 2).

Referring to claim 4, Flannery teaches

- said bus hub (i.e., HUB Logic 106 of Fig. 1A) is self powered (See col. 5, lines 64-66).

Referring to claim 11, Herwig teaches that

Art Unit: 2112

- said power supply (i.e., Power Supply 112 of Fig. 3) is coupled to a wire (i.e., power cord 102 of Fig. 3) to receive alternating current (AC) power (i.e., 110V AC),
- said power supply to convert said AC power into direct current (DC) power (i.e., 5/12 DC; See col. 6, lines 51-64).

Referring to claim 7, Herwig, as modified by Flannery, teaches that

- said power supply (i.e., Power Supply 112 of Fig. 3; Herwig) is coupled to a wire (i.e., power cord 102 of Fig. 3; Herwig) to receive alternating current (AC) power (i.e., 110V AC; Herwig) to convert said AC power into direct current (DC) power (i.e., 5/12 DC; See Herwig, col. 6, lines 51-64),
 - said DC power being coupled to said downstream receptacle (i.e., cable connector between lines 136, 138 and lines 90, 94 in Fig. 3; Herwig) and to said bus hub (i.e., HUB Logic 106 of Fig. 1A; Flannery).

Referring to claim 12, Herwig discloses a computing unit (i.e., retail terminal system 50 in Fig. 2), comprising:

- a computer (i.e., main unit 52 of Fig. 2) comprising:
 - an upstream receptacle (i.e., cable connector between line 94 and input device 55 in Fig. 2) to deliver data signals (i.e., USB data signals) to said computer (See col. 7, lines 11-15); and
 - a power receptacle (i.e., cable connector between line 90 and input device 55 in Fig. 2) to deliver electrical power (i.e., terminal power) to said computer (See col. 6, lines 65-67); and

Art Unit: 2112

- a power hub (i.e., wiring Hub 100 of Fig. 3) coupled to said upstream receptacle and said power receptacle via a cable (i.e., line 136 and line 138 in Fig. 3; See col. 6, line 65 through col. 7, line 10), wherein
 - said power hub (i.e., wiring Hub) comprises:
 - a housing (i.e., housing 110 of Fig. 3);
 - a power supply (i.e., Power Supply 112 of Fig. 3) enclosed in said housing (See Fig. 3),
 - said power supply being coupled to said cable to provide power to said computer (See col. 6, line 65 through col. 7, line 10); and
 - a bus hub (i.e., Protocol Conversion & USB Hub 114 of Fig. 3) enclosed in said housing (See Fig. 3),
 - said bus hub being coupled to said cable (i.e., Protocol Conversion & USB Hub 114 of Fig. 3 being coupled to Power & LAN 90 and USB interface 94, viz., cable, in Fig. 2) to receive power (i.e., receiving Vbus power via USB interface 94 of Fig. 2) and data signals (i.e., receiving D+, D- data signals via USB interface 94 of Fig. 2) from said computer (i.e., main unit).

Herwig does not expressly teach said power supply being coupled to said bus hub to supply power to said bus hub.

Flannery discloses an apparatus of providing power management using a self-powered USB device (See Abstract and Fig. 1A), wherein

Art Unit: 2112

- said apparatus comprising a power logic 114 (Fig. 1A) and a power supply (i.e., power supply 108 of Fig. 1A) being coupled to a bus hub (i.e., HUB Logic 106 of Fig. 1) to supply power to said bus hub (See col. 5, line 65 through col. 6, line 11).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have included said apparatus of providing power management, as disclosed by Flannery, to said computing unit, as disclosed by Herwig, so as to provide a superior solution to supplying the power needs of suspend/resume capabilities in a computer without the inefficiencies of a dual-stage power supply unit or the expense of incorporating both low-power and full-power units (See Flannery, col. 2, line 62 through col. 3, line 2) with the advantage of being able to supply 500mA to each downstream device (e.g., printers and speakers) attached to said bus hub (See Flannery, col. 4, lines 50-64).

Referring to claim 16, Herwig teaches

- said bus hub (i.e., Protocol Conversion & USB Hub 114 of Fig. 3) comprises an upstream port (i.e., port from Protocol Conversion & USB Hub 114 for line 136 in Fig. 3).

Referring to claim 17, Herwig teaches

- said bus hub (i.e., Protocol Conversion & USB Hub 114 of Fig. 3) comprises at least one downstream port (i.e., USB Port #1 140 and USB Port #2 142 in Fig. 3) to connect to at least one downstream device (e.g., Scanner 66 and POS Keyboard 62 in Fig. 2).

Referring to claim 19, Flannery teaches

- said bus hub (i.e., HUB Logic 106 of Fig. 1A) is self powered (See col. 5, lines 64-66).

Art Unit: 2112

Referring to claim 28, Herwig, as modified by Flannery, teaches that

- said power supply (i.e., Power Supply 112 of Fig. 3; Herwig) is coupled to receive alternating current (AC) power (i.e., 110V AC; Herwig) to convert said AC power into direct current (DC) power (i.e., 5/12 DC; See Herwig, col. 6, lines 51-64),
 - said DC power being coupled to said (i.e., cable connector between lines 136, 138 and lines 90, 94 in Fig. 3; Herwig) and to said bus hub (i.e., HUB Logic 106 of Fig. 1A; Flannery).

Referring to claim 29, Herwig discloses an apparatus (i.e., wiring Hub 100 of Fig. 3), comprising:

- a housing (i.e., housing 110 of Fig. 3);
- a power supply (i.e., Power Supply 112 of Fig. 3) enclosed in said housing (See Fig. 3),
 - said power supply (i.e., Power Supply 112 of Fig. 3) being coupled to receive alternating current (AC) power (i.e., 110V AC) to convert said AC power into direct current (DC) power (i.e., 5/12 DC; See col. 6, lines 51-64);
- a bus hub (i.e., Protocol Conversion & USB Hub 114 of Fig. 3) enclosed in said housing (See Fig. 3); and
- a downstream receptacle (i.e., cable connector between lines 136, 138 and lines 90, 94 in Fig. 3) in the housing connected to both said power supply and said bus hub (i.e., line 138 connected to Power Supply 112 and line 136 connected to Protocol Conversion & USB Hub 114 in Fig. 3),
 - said downstream receptacle being coupled to a cable (i.e., line 136 and line 138 in Fig. 3) to couple DC power (i.e., converted 110V AC power to DC; See col. 6, lines 51-54) from said power supply (See col. 6, lines 65-66) and data signals from said bus hub to said cable (See col. 7, lines 11-15) and to receive DC power and data signals from said cable (See col. 6, line 65 through col. 7, line 10).

Art Unit: 2112

Herwig does not expressly teach said bus hub being coupled to said power supply to receive said DC power from said power supply.

Flannery discloses an apparatus of providing power management using a self-powered USB device (See Abstract and Fig. 1A), wherein

- said apparatus comprising
 - a power logic 114 (Fig. 1A) and a bus hub (i.e., HUB Logic 106 of Fig. 1) being coupled to a power supply (i.e., power supply 108 of Fig. 1A) to receive DC power from said power supply (See col. 5, line 65 through col. 6, line 11).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have included said apparatus of providing power management, as disclosed by Flannery, to said apparatus, as disclosed by Herwig, so as to provide a superior solution to supplying the power needs of suspend/resume capabilities in a computer without the inefficiencies of a dual-stage power supply unit or the expense of incorporating both low-power and full-power units (See Flannery, col. 2, line 62 through col. 3, line 2) with the advantage of being able to supply 500mA to each downstream device (e.g., printers and speakers) attached to said bus hub (See Flannery, col. 4, lines 50-64).

Referring to claim 30, Herwig teaches

- said bus hub (i.e., Protocol Conversion & USB Hub 114 of Fig. 3) comprises
 - a root port (i.e., port from Protocol Conversion & USB Hub 114 for line 136 in Fig. 3).

Referring to claim 31, Herwig teaches

- said bus hub (i.e., Protocol Conversion & USB Hub 114 of Fig. 3) comprises
 - a downstream port (i.e., USB Port #1 140 and USB Port #2 142 in Fig. 3) to be coupled to a downstream device (e.g., Scanner 66 and POS Keyboard 62 in Fig. 2).

Referring to claim 32, Flannery teaches

- said bus hub (i.e., HUB Logic 106 of Fig. 1A) is self powered (See col. 5, lines 64-66).

Referring to claim 39, Herwig discloses a computing unit (i.e., retail terminal system 50 in Fig. 2), comprising:

- a computer (i.e., main unit 52 of Fig. 2) comprising:
 - an upstream receptacle (i.e., cable connector between line 94 and input device 55 in Fig. 2) to deliver data signals (i.e., USB data signals) to said computer (See col. 7, lines 11-15); and
 - a power receptacle (i.e., cable connector between line 90 and input device 55 in Fig. 2) to deliver electrical power (i.e., terminal power) to said computer (See col. 6, lines 65-67); and
 - a power hub (i.e., wiring Hub 100 of Fig. 3) coupled to said upstream receptacle and said power receptacle of said computer via a cable (i.e., line 136 and line 138 in Fig. 3; See col. 6, line 65 through col. 7, line 10), wherein
 - said power hub (i.e., wiring Hub) comprises:
 - a housing (i.e., housing 110 of Fig. 3);
 - a power supply (i.e., Power Supply 112 of Fig. 3) enclosed in said housing (See Fig. 3),
 - said power supply being coupled to receive alternating current (AC) power (i.e., 110V AC) to convert said AC power into direct current (DC) power (i.e., 5/12 DC; See col. 6, lines 51-64),

Art Unit: 2112

- said power supply being coupled to said cable to provide DC power to said computer (See col. 6, line 65 through col. 7, line 10); and
- a bus hub (i.e., Protocol Conversion & USB Hub 114 of Fig. 3) enclosed in said housing (See Fig. 3),
 - said bus hub being coupled to said cable (i.e., Protocol Conversion & USB Hub 114 of Fig. 3 being coupled to Power & LAN 90 and USB interface 94, viz., cable, in Fig. 2) to receive power (i.e., receiving Vbus power via USB interface 94 of Fig. 2) and data signals (i.e., receiving D+, D- data signals via USB interface 94 of Fig. 2) from said computer (i.e., main unit).

Herwig does not expressly teach said bus hub being coupled to said power supply to receive DC power from said power supply.

Flannery discloses an apparatus of providing power management using a self-powered USB device (See Abstract and Fig. 1A), wherein

- said apparatus comprising
 - a power logic 114 (Fig. 1A) and a bus hub (i.e., HUB Logic 106 of Fig. 1) being coupled to a power supply (i.e., power supply 108 of Fig. 1A) to receive DC power from said power supply (See col. 5, line 65 through col. 6, line 11).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have included said apparatus of providing power management, as disclosed by Flannery, to said computing unit, as disclosed by Herwig, so as to provide a superior solution to supplying the power needs of suspend/resume capabilities in a computer without the inefficiencies of a dual-stage power supply unit or the expense of incorporating both low-power and full-power units (See Flannery, col. 2, line 62

Art Unit: 2112

through col. 3, line 2) with the advantage of being able to supply 500mA to each downstream device (e.g., printers and speakers) attached to said bus hub (See Flannery, col. 4, lines 50-64).

Referring to claim 41, Herwig teaches

- said bus hub (i.e., Protocol Conversion & USB Hub 114 of Fig. 3) comprises
 - a root port (i.e., port from Protocol Conversion & USB Hub 114 for line 136 in Fig. 3).

Referring to claim 42, Herwig teaches

- said bus hub (i.e., Protocol Conversion & USB Hub 114 of Fig. 3) comprises
 - a downstream port (i.e., USB Port #1 140 and USB Port #2 142 in Fig. 3) to be coupled to a downstream device (e.g., Scanner 66 and POS Keyboard 62 in Fig. 2).

Referring to claim 43, Flannery teaches

- said bus hub (i.e., HUB Logic 106 of Fig. 1A) is self powered (See col. 5, lines 64-66).

Claims 5, 20, 33 and 44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Herwig [US 6,701,192 B1] in view of Flannery [US 5,799,196 A] as applied to claims 1-4, 7, 11, 12, 16, 17, 19, 28-32, 39 and 41-43 above, and further in view of what was well known in the art, as exemplified by USB Specification [Universal Serial Bus Specification published by Compaq, Intel, Microsoft and NEC, Rev. 1.1., September 23, 1998; cited by the Applicant; hereinafter USB Spec].

Referring to claims 5, 20, 33 and 44, Herwig discloses all the limitations of the claims 5, 20, 33 and 44, respectively, except that does not expressly teach said bus hub is bus powered.

The Examiner takes Official Notice that said bus hub is bus powered, is well known to one of ordinary skill in the art, as evidenced by USB Spec on page 135, 7.2.1.1 Bus-powered Hubs.

Art Unit: 2112

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have included said bus powered bus hub in said apparatus since it would allow power being always available to said bus hub (See USB Spec, 7.2.1.1 Bus-powered Hubs).

Claims 6, 18, 34-36 and 45-47 are rejected under 35 U.S.C. 103(a) as being unpatentable over Herwig [US 6,701,192 B1] in view of Flannery [US 5,799,196 A] as applied to claims 1-4, 7, 11, 12, 16, 17, 19, 28-32, 39 and 41-43 above, and further in view of Urade et al. [US 6,272,644 B1; hereinafter Urade].

Referring to claims 6 and 18, Herwig discloses all the limitations of the claims 6 and 18, respectively, except that does not teach a hub repeater connected to said upstream port.

Urade discloses a USB hub 11 (Fig. 4), wherein

- a hub repeater (i.e., Hub Repeater 12 of Fig. 4) connected to an upstream port (i.e., Root Port 13 of Fig. 4).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have included said hub repeater, as disclosed by Urade, in said bus hub, as disclosed by Herwig, as modified by Flannery, so as to manage port connectivity between a selected downstream functional device and a host computer connected to said upstream port (i.e., root port; See Urade, col. 3, lines 60-62).

Referring to claim 34, Herwig discloses all the limitations of the claim 34, except that does not teach a hub repeater coupled between a root port and a plurality of downstream ports in said bus hub to manage connections to and through said bus hub, each downstream port to be coupled to a downstream device.

Urade discloses a bus hub (i.e., USB hub 11 of Fig. 4), wherein

Art Unit: 2112

- a hub repeater (i.e., Hub Repeater 12 of Fig. 4) coupled between a root port (i.e., Root Port 13 of Fig. 4) and a plurality of downstream ports (i.e., Ports 1-4 14-17 in Fig. 4) in said bus hub to manage connections to and through said bus hub (See col. 3, lines 60-64),
 - each downstream port to be coupled to a downstream device (See col. 3, lines 40-43).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have included said hub repeater, as disclosed by Urade, in said bus hub, as disclosed by Herwig, as modified by Flannery, so as to manage port connectivity between a selected downstream functional device and a host computer connected to said upstream port (i.e., root port; See Urade, col. 3, lines 60-62).

Referring to claim 35, Urade teaches that

- said downstream devices comprise
 - a mouse, a keyboard or a printer (e.g., plotter; See col. 3, lines 42-43).

Referring to claim 36, Urade teaches that

- a hub controller (i.e., Hub Controller 19 of Fig. 4) coupled to said hub repeater (i.e., coupled to Hub Repeater 12 via connection from SIE 20 in Fig. 4) in said bus hub (i.e., USB Hub 11 of Fig. 4) to route signals between said root port and said downstream ports (See col. 3, lines 60-64; i.e., wherein in fact that managing port connectivity between the selected downstream functional device and a host computer connected to the root port implies routing signals between said root port and said downstream ports) and to perform error detection (i.e., error checking) and recovery (i.e., clock recovery; See col. 3, line 65 through col. 4, line 6).

Referring to claim 45, Herwig discloses all the limitation of the claim 45, except that does not teach a hub repeater coupled between a root port and a plurality of downstream ports in said bus hub to

Art Unit: 2112

manage connections to and through said bus hub, each downstream port to be coupled to a downstream device.

Urade discloses a bus hub (i.e., USB hub 11 of Fig. 4), wherein

- a hub repeater (i.e., Hub Repeater 12 of Fig. 4) coupled between a root port (i.e., Root Port 13 of Fig. 4) and a plurality of downstream ports (i.e., Ports 1-4 14-17 in Fig. 4) in said bus hub to manage connections to and through said bus hub (See col. 3, lines 60-64),
 - each downstream port to be coupled to a downstream device (See col. 3, lines 40-43).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have included said hub repeater, as disclosed by Urade, in said bus hub, as disclosed by Herwig, as modified by Flannery, so as to manage port connectivity between a selected downstream functional device and a host computer connected to said upstream port (i.e., root port; See Urade, col. 3, lines 60-62).

Referring to claim 46, Urade teaches that

- said downstream devices comprise
 - a mouse, a keyboard or a printer (e.g., plotter; See col. 3, lines 42-43).

Referring to claim 47, Urade teaches that

- a hub controller (i.e., Hub Controller 19 of Fig. 4) coupled to said hub repeater (i.e., coupled to Hub Repeater 12 via connection from SIE 20 in Fig. 4) in said bus hub (i.e., USB Hub 11 of Fig. 4) to route signals between said root port and said downstream ports (See col. 3, lines 60-64; i.e., wherein in fact that managing port connectivity between the selected downstream functional device and a host computer connected to the root port implies routing signals between said root port and said downstream ports) and to perform error detection (i.e., error checking) and recovery (i.e., clock recovery; See col. 3, line 65 through col. 4, line 6).

Claims 8 and 38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Herwig [US 6,701,192 B1] in view of Flannery [US 5,799,196 A] as applied to claims 1-4, 7, 11, 12, 16, 17, 19, 28-32, 39 and 41-43 above, and further in view of Kang [US 6,253,329 B1] and Tsai [US 6,283,789 B1].

Referring to claims 8 and 38, Herwig, as modified by Flannery, discloses all the limitations of the claims 8 and 38, respectively, including

- said cable (i.e., line 136 and line 138 in Fig. 3; Herwig) comprises
 - a computer power wire (i.e., line 138 of Fig. 4; Herwig) to provide power, which is DC power, from said power supply (i.e., Power Supply 112 of Fig. 3; Herwig) to a computer (i.e., main unit 52 of Fig. 2; See Herwig, col. 6, lines 65-67); and
 - a signal wire (i.e., line 136 of Fig. 3; Herwig) to carry data signals between said computer and said bus hub (See Herwig, col. 7, lines 11-17),

except that does not expressly teach a device power wire to provide power to said bus hub; a device ground wire; a computer ground wire; and a plurality of signal wires to carry said data signals.

Kang discloses a USB Hub having a plurality of input power sources (See Abstract and Fig. Fig. 3), wherein

- a device power wire (i.e., UpStream Vbus in Fig. 3) to provide power to a bus hub (i.e., USB Hub 200 of Fig. 2);
- a device ground wire (i.e., USB GND wire; in fact, USB UpStream Data Port in Fig. 3 inherently suggests USB GND wire according to the USB specification); and
- a plurality of signal wires to carry data signals (i.e., USB D+, D- signal wires; in fact, USB UpStream Data Port in Fig. 3 inherently suggests USB D+, D- signal wires according to the USB specification).

Art Unit: 2112

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have applied said plurality of input power sources, as disclosed by Kang, to said apparatus, as disclosed by Herwig, as modified by Flannery, so as said power supply to supply power to said bus hub for the advantage of providing said bus hub (i.e., USB hub) having a plurality of input power supplies (See Kang, col. 2, lines 3-10).

Herwig, as modified by Flannery and Kang, does not expressly teach a computer ground wire.

Tsai teaches a cable (i.e., cable system 300 of Fig. 1) comprises

- a device power wire (i.e., wire of cable 15, which is connected to V_{bus} 1a of Fig. 4);
- a device ground wire (i.e., wire of cable 15, which is connected to GND 4a of Fig. 4);
- a computer power wire (i.e., wire of cable 16, which is connected to V_{bus} 1a of Fig. 5);
- a computer ground wire (i.e., wire of cable 16, which is connected to GND 4a of Fig. 5); and
- a plurality of signal wires (i.e., wires of cable 15, which are connected to D₋ 2a and D₊ 3a in Fig. 4).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have implemented said cable, as disclosed by Herwig, as modified by Flannery and Kang, using said cable system, as disclosed by Tsai, for the advantage of providing a compact and clean wiring in said housing, which is a common sense to one of ordinary skill in the art of electronics wiring.

Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Herwig [US 6,701,192 B1] in view of Flannery [US 5,799,196 A], Kang [US 6,253,329 B1] and Tsai [US 6,283,789 B1] as applied to claim 8 above, and further in view of Decuir [US 5,781,028 A].

Referring to claim 9, Herwig, as modified by Flannery, Kang and Tsai, discloses all the limitations of the claim 9 except that does not teach said plurality of signal wires further comprises a signal twisted pair.

Art Unit: 2112

Decuir discloses a system for a switched data bus termination (Fig. 6), wherein

- a plurality of signal wires (i.e., USB data signal wires in Fig. 6) comprises a signal twisted pair (i.e., twisted pair data cable 72 of Fig. 6).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have used said twisted pair cable, as disclosed by Decuir, for said signal wires, as disclosed by Herwig, as modified by Flannery, Kang and Tsai, for the advantage of supporting high speed version of USB (See Decuir, col. 5, lines 5-7).

Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Herwig [US 6,701,192 B1] in view of Flannery [US 5,799,196 A], Kang [US 6,253,329 B1] and Tsai [US 6,283,789 B1] as applied to claim 8 above, and further in view of Sanchez [US 6,446,867 B1].

Referring to claim 10, Herwig, as modified by Flannery, Kang and Tsai, discloses all the limitations of the claim 10 except that does not teach said plurality of signal wires further comprises a fiber optic channel.

Sanchez discloses an electro-optic interface system (Fig. 2A), wherein

- a plurality of signal wires (i.e., a plurality of optical links in Fig. 2A), which are driven by a laser module 250 (Fig. 2A) and a photo detector 260 (Fig. 2A), comprises
 - a fiber optic channel (i.e., optical channel of Fiber Optic Cable 135 in Fig. 2A).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have used said fiber optic channel with its driver, as disclosed by Sanchez, for signal wires, as disclosed by Herwig, as modified by Flannery, Kang and Tsai, for the advantage of providing an electro-optic system of operation for communicating high speed digital signals between two or more electronic systems (See Sanchez, col. 1, lines 57-60) without spreading electromagnetic noise, which is well known to one of ordinary skill in the art of fiber optical communication.

Art Unit: 2112

Claims 13 and 40 is rejected under 35 U.S.C. 103(a) as being unpatentable over Herwig [US 6,701,192 B1] in view of Flannery [US 5,799,196 A] as applied to claims 1-4, 7, 11, 12, 16, 17, 19, 28-32, 39 and 41-43 above, and further in view of Tsai [US 6,283,789 B1].

Referring to claims 13 and 40, Herwig, as modified by Flannery, discloses all the limitations of the claims 13 and 40, respectively, including

- said cable (i.e., Power & LAN 90 and USB interface 94, viz., cable, in Fig. 2; Herwig) comprises
 - a device power wire (i.e., Vbus power wire on USB interface 94 of Fig. 2; Herwig) to provide power , which is DC power, from said computer to said bus hub (i.e., bus power on USB interface 94 of Fig. 2; Herwig);
 - a device ground wire (i.e., GND wire on USB interface 94 of Fig. 2; Herwig);
 - a computer power wire (i.e., Power & LAN 90 of Fig. 2; Herwig) to provide power from said power supply to said computer (i.e., main unit 52 of Fig. 2; See Herwig, col. 6, lines 65-67); and a plurality of signal wires (i.e., D+, D- data signal wires on USB interface 94 in Fig. 2; Herwig) to carry data signals (i.e., USB data signals; Herwig) between said computer and said bus hub (See Herwig, col. 7, lines 11-17),

except that does not expressly teach a computer ground wire.

Tsai teaches a cable (i.e., cable system 300 of Fig. 1) comprises

- a device power wire (i.e., wire of cable 15, which is connected to V_{bus} 1a of Fig. 4);
- a device ground wire (i.e., wire of cable 15, which is connected to GND 4a of Fig. 4);
- a computer power wire (i.e., wire of cable 16, which is connected to V_{bus} 1a of Fig. 5);
- a computer ground wire (i.e., wire of cable 16, which is connected to GND 4a of Fig. 5); and
- a plurality of signal wires (i.e., wires of cable 15, which are connected to D. 2a and D+ 3a in Fig. 4).

Art Unit: 2112

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have implemented said cable, as disclosed by Herwig, as modified by Flannery, using said cable system, as disclosed by Tsai, for the advantage of providing a compact and clean wiring in said housing, which is a common sense to one of ordinary skill in the art of electronics wiring.

Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Herwig [US 6,701,192 B1] in view of Flannery [US 5,799,196 A] and Tsai [US 6,283,789 B1] as applied to claims 13 and 40 above, and further in view of Decuir [US 5,781,028 A].

Referring to claim 14, Herwig, as modified by Flannery and Tsai, discloses all the limitations of the claim 14, except that does not teach said plurality of signal wires comprises a twisted pair.

Decuir discloses a system for a switched data bus termination (Fig. 6), wherein

- a plurality of signal wires (i.e., USB data signal wires in Fig. 6) comprises
 - a twisted pair (i.e., twisted pair data cable 72 of Fig. 6).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have used said twisted pair cable, as disclosed by Decuir, for said signal wires, as disclosed by Herwig, as modified by Flannery and Tsai, for the advantage of supporting high speed version of USB (See Decuir, col. 5, lines 5-7).

Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Herwig [US 6,701,192 B1] in view of Flannery [US 5,799,196 A] and Tsai [US 6,283,789 B1] as applied to claims 13 and 40 above, and further in view of Sanchez [US 6,446,867 B1].

Referring to claim 15, Herwig, as modified by Flannery and Tsai, discloses all the limitations of the claim 15, except that does not teach said plurality of signal wires comprises a fiber optic channel.

Sanchez discloses an electro-optic interface system (Fig. 2A), wherein

Art Unit: 2112

- a plurality of signal wires (i.e., a plurality of optical links in Fig. 2A), which are driven by a laser module 250 (Fig. 2A) and a photo detector 260 (Fig. 2A), comprises
 - a fiber optic channel (i.e., optical channel of Fiber Optic Cable 135 in Fig. 2A).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have used said fiber optic channel with its driver, as disclosed by Sanchez, for signal wires, as disclosed by Herwig, as modified by Flannery and Tsai, for the advantage of providing an electro-optic system of operation for communicating high speed digital signals between two or more electronic systems (See Sanchez, col. 1, lines 57-60) without spreading electromagnetic noise, which is well known to one of ordinary skill in the art of fiber optical communication.

Claims 21-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Herwig [US 6,701,192 B1] in view of Tsai [US 6,283,789 B1].

Referring to claim 21, Herwig discloses a cable (i.e., Power & LAN 90 and USB interface 94, viz., cable, in Fig. 2) comprising:

- a device power wire (i.e., Vbus power wire on USB interface 94 of Fig. 2; in fact, Vbus power flowing from Host computer side to the Peripheral side in light of the standard USB specification) to provide power from a computer (i.e., main unit 52 of Fig. 2) to a power hub (i.e., wiring Hub 100 of Fig. 2; in fact, bus power on USB interface 94 of Fig. 2);
- a device ground wire (i.e., GND wire on USB interface 94 of Fig. 2);
- a computer power wire (i.e., Power & LAN 90 of Fig. 2) to provide power from said power hub to said computer (i.e., main unit 52 of Fig. 2; See col. 5, lines 2-9 and col. 6, lines 65-67); and
- a plurality of signal wires (i.e., D+, D- data signal wires on USB interface 94 in Fig. 2) to carry data signals (i.e., USB data signals) between said computer and said power hub (See col. 7, lines 11-17),

Art Unit: 2112

except that does not expressly teach a computer ground wire.

Tsai teaches a cable (i.e., cable system 300 of Fig. 1) comprises

- a device power wire (i.e., wire of cable 15, which is connected to V_{bus} 1a of Fig. 4);
- a device ground wire (i.e., wire of cable 15, which is connected to GND 4a of Fig. 4);
- a computer power wire (i.e., wire of cable 16, which is connected to V_{bus} 1a of Fig. 5);
- a computer ground wire (i.e., wire of cable 16, which is connected to GND 4a of Fig. 5); and
- a plurality of signal wires (i.e., wires of cable 15, which are connected to D₊ 2a and D₊ 3a in Fig. 4).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have implemented said cable, as disclosed by Herwig, in said cable system, as disclosed by Tsai, for the advantage of providing a compact and clean wiring in said housing, which is a common sense to one of ordinary skill in the art of electronics wiring.

Referring to claim 22, Tsai teaches

- an upstream plug (i.e., B connector 20 and 21 in Fig. 1) to connect to both an upstream bus receptacle and a power receptacle (i.e., peripheral device port system 100 of Fig. 6), wherein
 - said power receptacle draws electric power from said computer power wire (See col. 3, lines 59-63; i.e., wherein in fact that delivering extra power to the peripheral device port system implies said power receptacle draws electric power from said computer power wire).

Referring to claim 23, Tsai teaches

Art Unit: 2112

- a downstream plug (i.e., A connector 10 and 11 in Fig. 1) to electrically connect to both a downstream bus receptacle and a power receptacle (i.e., main device port system 200 of Fig. 7), wherein
 - said power receptacle is to supply electric power to said computer power wire (See col. 3, lines 59-63; i.e., wherein in fact that delivering extra power to the peripheral device port system implies said power receptacle is to supply electric power to said computer power wire), and wherein
 - said downstream bus receptacle is connected to said device power wire, said device ground wire, and said plurality of signal wires (See col. 4, lines 1-11; i.e., wherein in fact that power and data are transmitted by the first cable (e.g., USB cable) between the first port and one of the two ports on peripheral device port system implies said downstream bus receptacle is connected to said device power wire, said device ground wire, and said plurality of signal wires).

Claim 26 is rejected under 35 U.S.C. 103(a) as being unpatentable over Herwig [US 6,701,192 B1] in view of Tsai [US 6,283,789 B1] as applied to claims 21-23 above, and further in view of Decuir [US 5,781,028 A].

Referring to claim 26, Herwig, as modified by Tsai, discloses all the limitations of the claim 26, except that does not teach said plurality of signal wires comprises a twisted pair.

Decuir discloses a system for a switched data bus termination (Fig. 6), wherein

- a plurality of signal wires (i.e., USB data signal wires in Fig. 6) comprises
 - a twisted pair (i.e., twisted pair data cable 72 of Fig. 6).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have used said twisted pair cable, as disclosed by Decuir, for said signal wires, as disclosed by

Art Unit: 2112

Herwig, as modified by Tsai, for the advantage of supporting high speed version of USB (See Decuir, col. 5, lines 5-7).

Claim 27 is rejected under 35 U.S.C. 103(a) as being unpatentable over Herwig [US 6,701,192 B1] in view of Tsai [US 6,283,789 B1] as applied to claims 21-23 above, and further in view of Sanchez [US 6,446,867 B1].

Referring to claim 27, Herwig, as modified by Tsai, discloses all the limitations of the claim 27, except that does not teach said plurality of signal wires comprises a fiber optic channel.

Sanchez discloses an electro-optic interface system (Fig. 2A), wherein

- a plurality of signal wires (i.e., a plurality of optical links in Fig. 2A), which are driven by a laser module 250 (Fig. 2A) and a photo detector 260 (Fig. 2A), comprises a fiber optic channel (i.e., optical channel of Fiber Optic Cable 135 in Fig. 2A).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have used said fiber optic channel with its driver, as disclosed by Sanchez, for signal wires, as disclosed by Herwig, as modified by Tsai, for the advantage of providing an electro-optic system of operation for communicating high speed digital signals between two or more electronic systems (See Sanchez, col. 1, lines 57-60) without spreading electromagnetic noise, which is well known to one of ordinary skill in the art of fiber optical communication.

Claims 37 and 48 are rejected under 35 U.S.C. 103(a) as being unpatentable over Herwig [US 6,701,192 B1] in view of Flannery [US 5,799,196 A] and Urade [US 6,272,644 B1] as applied to claims 6, 18, 34-36 and 45-47 above, and further in view of Silverman et al. [US 6,370,603 B1; hereinafter Silverman].

Referring to claims 37 and 48, Herwig, as modified by Flannery and Urade, discloses all the limitations of the claim 37 and 48, respectively, except that does not expressly teach said hub controller

Art Unit: 2112

and said hub repeater comprising memory stored instructions executable by a processor or logic gates or a programmable logic device.

Silverman discloses a configurable universal serial bus (USB) controller (See Abstract and Fig. 4), wherein

- a hub controller and a hub repeater (i.e., Serial interface engine 412 and USB interface 414 in Fig. 4) comprising
 - memory stored instructions (i.e., user's program in Flash memory 406 in Fig. 4) executable by a processor (i.e., 16-bit processor 404 of Fig. 4; See col. 6, lines 59-61),
 - logic gates (e.g., timer logics 405a and 405b in Fig. 4) and
 - a programmable logic device (i.e., PLD/FPGA 416 of Fig. 4).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have included said configuration components (i.e., user's program in Flash memory run by 16-bit processor, timer logics and PLD/FPGA), as disclosed by Silverman, in said hub controller and said hub repeater, as disclosed by Herwig, as modified by Flannery and Urade, for the advantage of providing an improved technique for effecting digital communications between said downstream devices (i.e., digital devices) and systems using different communication protocols (See Silverman, col. 4, lines 10-13).

(10) Response to Argument

In response to the Appellant's argument with respect to "... The appellant respectfully submits that the rejections of claims 1-23 and 26-48 under §103 are improperly based on hindsight as the final Office Action has not provided clear and particular evidence of a suggestion or motivation to form the proposed combinations from the applied references. ..." in the Brief on pages 10 and 11, the Examiner respectfully disagrees.

In contrary to the Appellant's statement, the Examiner provided clear evidence of a suggestion/motivation in the claim rejections. (See (9) Grounds of Rejection in the instant Examiner's Answer). Further, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the Appellant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971).

In this case,

- I. The primary reference Herwig and the secondary reference Flannery for the claims 1-4, 7, 11, 12, 16, 17, 19, 28-32, 39, and 41-43 rejection under 35 USC §103(a) as being unpatentable over the references, are analogous art because they are from a similar problem solving area, viz., USB system, and it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the Appellant's disclosure. Therefore, the combination of the references Herwig and Flannery with rationale is proper.

Art Unit: 2112

- II. The primary reference Herwig and the secondary references Flannery, USB Specification for the claims 5, 20, 33, and 44 rejection under 35 USC §103(a) as being unpatentable over the references, are analogous art because they are from a similar problem solving area, viz., USB system and USB Standard Specification, and it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the Appellant's disclosure. Therefore, the combination of the references Herwig, Flannery and USB Specification with rationale is proper.
- III. The primary reference Herwig and the secondary references Flannery, Urade for the claims 6, 18, 34-36, and 45-47 rejection under 35 USC §103(a) as being unpatentable over the references, are analogous art because they are from a similar problem solving area, viz., USB system, and it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the Appellant's disclosure. Therefore, the combination of the references Herwig, Flannery and Urade with rationale is proper.
- IV. The primary reference Herwig and the secondary references Flannery, Kang, Tsai for the claims 8, and 38 rejection under 35 USC §103(a) as being unpatentable over the references, are analogous art because they are from a similar problem solving area, viz., USB Hub and USB Cable, and it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the Appellant's disclosure. Therefore, the combination of the references Herwig, Flannery, Kang and Tsai with rationale is proper.

Art Unit: 2112

- V. The primary reference Herwig and the secondary references Flannery, Kang, Tsai, Decuir for the claim 9 rejection under 35 USC §103(a) as being unpatentable over the references, are analogous art because they are from a similar problem solving area, viz., USB Hub and USB Bus/Cable, and it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the Appellant's disclosure. Therefore, the combination of the references Herwig, Flannery, Kang, Tsai and Decuir with rationale is proper.
- VI. The primary reference Herwig and the secondary references Flannery, Kang, Tsai, Sanchez for the claim 10 rejection under 35 USC §103(a) as being unpatentable over the references, are analogous art because they are from a similar problem solving area, viz., USB Hub and USB Serial cable improvement, and it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the Appellant's disclosure. Therefore, the combination of the references Herwig, Flannery, Kang, Tsai and Sanchez with rationale is proper.
- VII. The primary reference Herwig and the secondary references Flannery, Tsai for the claims 13 and 40 rejection under 35 USC §103(a) as being unpatentable over the references, are analogous art because they are from a similar problem solving area, viz., USB Hub and USB Bus/Cable, and it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the Appellant's disclosure. Therefore, the combination of the references Herwig, Flannery and Tsai with rationale is proper.

Art Unit: 2112

- VIII. The primary reference Herwig and the secondary references Flannery, Tsai, Decuir for the claim 14 rejection under 35 USC §103(a) as being unpatentable over the references, are analogous art because they are from a similar problem solving area, viz., USB Hub and USB Bus/Cable, and it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the Appellant's disclosure. Therefore, the combination of the references Herwig, Flannery, Tsai and Decuir with rationale is proper.
- IX. The primary reference Herwig and the secondary references Flannery, Tsai, Sanchez for the claim 15 rejection under 35 USC §103(a) as being unpatentable over the references, are analogous art because they are from a similar problem solving area, viz., USB Hub and USB Serial cable improvement, and it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the Appellant's disclosure. Therefore, the combination of the references Herwig, Flannery, Tsai and Sanchez with rationale is proper.
- X. The primary reference Herwig and the secondary reference Tsai for the claims 21, and 23 rejection under 35 USC §103(a) as being unpatentable over the references, are analogous art because they are from a similar problem solving area, viz., USB Hub and USB Cable, and it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the Appellant's disclosure. Therefore, the combination of the references Herwig and Tsai with rationale is proper.

Art Unit: 2112

- XI. The primary reference Herwig and the secondary references Tsai, Decuir for the claim 26 rejection under 35 USC §103(a) as being unpatentable over the references, are analogous art because they are from a similar problem solving area, viz., USB Hub and USB Bus/Cable, and it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the Appellant's disclosure. Therefore, the combination of the references Herwig, Tsai and Decuir with rationale is proper.
- XII. The primary reference Herwig and the secondary references Tsai, Sanchez for the claim 27 rejection under 35 USC §103(a) as being unpatentable over the references, are analogous art because they are from a similar problem solving area, viz., USB Hub and USB Serial cable improvement, and it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the Appellant's disclosure. Therefore, the combination of the references Herwig, Tsai and Sanchez with rationale is proper.
- XIII. The primary reference Herwig and the secondary references Flannery, Urade, Silverman for the claims 37, and 48 rejection under 35 USC §103(a) as being unpatentable over the references, are analogous art because they are from a similar problem solving area, viz., USB system, and it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the Appellant's disclosure. Therefore, the combination of the references Herwig, Flannery, Urade and Silverman with rationale is proper.

Thus, the Appellant's argument for this point cannot be seen as persuasive.

*In response to the Appellant's arguments with respect to "I. Claims 1 to 4, 7, 11, 12, 16, 17, 19, 28 to 32, 39, and 41 to 43 stand rejected under 35 USC §103(a) as being unpatentable over Herwig (U.S. 6,701,192 B1) and Flannery (U.S. 5,799,196 A). ... The final Office Action has not cited clear and particular evidence of record in support of a motivation to modify Herwig according to Flannery as is required by *In re Dembiczak* and *In re Lee*, and has not cited evidence of a reasonable expectation of success of the proposed combination of Herwig and Flannery as is required by *In re Vaeck* and *In re Lee*. ... "* in the Brief on pages 12-14, the Examiner believes that the Appellant misinterprets the claims rejection.

Actually, the Appellant particularly argues that "... the final Office Action proposes as the motivation for the combination the above text from the Summary of Flannery. However, Flannery only shows electronics internal to a USB host and a USB remote hub. Flannery's claimed advantages arise from these electronics internal to the USB system shown and described by Flannery. One skilled in the art would not be motivated by Flannery to couple the power supply 112 to the USB hub interface 114 of Herwig because the power supply 112 is outside the USB system shown in Herwig." at the last paragraph on page 13. In other words, the Appellant asserts that Flannery's claimed advantages arise from the electronics internal to the USB system shown and described by Flannery, and thus one skilled in the art would not be motivated by Flannery to couple the power supply to the USB hub interface of Herwig because the power supply is outside the USB system shown in Herwig.

However, in contrary to the Appellant's assertion, the power supply 112 is with the USB hub 114 within a housing 110 in the USB system, i.e., wiring Hub system 100, shown in Herwig, Fig. 3. Herwig never suggests the power supply 112 is outside the USB system at all. And, Flannery clearly suggests a feature of providing power management requires the coupling of power supply 108 and hub logic 106 in Fig. 1A, as a nexus of said power management. Therefore, the combination of Herwig and Flannery, i.e., combining the apparatus of Herwig with Flannery's apparatus of providing power management, shows

Art Unit: 2112

the obviousness of the claimed invention, such that providing a superior solution to supplying the power needs of suspend/resume capabilities in a computer without the inefficiencies of a dual-stage power supply unit or the expense of incorporating both low-power and full-power units (See Flannery, col. 2, line 62 through col. 3, line 2) with the advantage of being able to supply 500mA to each downstream device (e.g., printers and speakers) attached to said bus hub (See Flannery, col. 4, lines 50-64).

Further, the Appellant continuously argues that the final Office Action has not shown how such a coupling in Herwig would bring the benefits claimed by Flannery, and the USB hub interface 114 of Herwig would get its power from a host or from its own internal power supply, not the power supply 112 according to the USB Specification 1998.

However, the final Office Action provides rationale for the proper combination of Herwig and Flannery. Moreover, the test for obviousness is not whether the features of Flannery may be bodily incorporated into the structure of Herwig; nor is it that the claimed invention must be expressly suggested in any one or all of the references. Rather, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981).

Therefore, Appellant's argument on this point appears to be in error and should not be held as persuasive for patentability.

In response to the Appellant's arguments with respect to "II. Claims 5, 20, 33, and 44 stand rejected under 35 USC §103(a) as being unpatentable over Herwig, Flannery, and USB Specification 1998 (Universal Serial Bus Specification published by Compaq, Intel, Microsoft and NEC, Rev. 1.1, September 23, 1998). ... If the USB hub interface 114 of Herwig is bus powered according to the Examiner's Official Notice here, one skilled in the art would not be motivated to couple the power supply 112 to the USB hub interface 114 of Herwig. A bus powered USB hub does not need an additional source of power. ..." in the Brief on pages 14 and 15, the Examiner respectfully disagrees.

In contrary to the Appellant's statement, USB hub could have both of the power supplying functions in light of USB specification. In other words, even though a USB hub is using bus power, it may need an additional source of power for the self-power for driving a plurality of high-power consumption devices. The USB specification does not limit that a bus powered USB hub should not have use an additional source of power, for example.

Thus, Appellant's argument for this point cannot be seen as persuasive.

In response to the Appellant's arguments with respect to "III. Claims 6, 18, 34 to 36, and 45 to 47 stand rejected under 35 USC §103(a) as being unpatentable over Herwig, Flannery, and Urade et al. (U.S. 6,272,644 B1, Urade). ... However, Urade does not provide a motivation for modifying Herwig in view of Flannery. ..." in the Brief on pages 15 and 16, the Examiner respectfully disagrees.

In contrary to the Appellant's statement, the final Office Action provides a proper motivation at paragraph 7 on pages 9 and 10.

Furthermore, the Appellant's argument fails to comply with 37 CFR 1.111(b) because they amount to a general allegation that the claims define a patentable invention without specifically pointing out how the language of the claims patentably distinguishes them from the references.

Also, in contrary to the Appellant's assertion, i.e., the final Office Action has not shown evidence of how the USB hub interface 114 of Herwig can have the Hub Repeater 12 of Urade and be coupled to receive power from the power supply 112, the test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference; nor is it that the claimed invention must be expressly suggested in any one or all of the references. Rather, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981).

Thus, Appellant's argument for this point cannot be seen as persuasive.

Art Unit: 2112

In response to the Appellant's arguments with respect to "IV. Claims 8 and 38 stand rejected under 35 USC §103(a) as being unpatentable over Herwig, Flannery, Kang et al. (U.S. 6,253,329 B1, Kang and Tsai (U.S. 6,283,789 B1). ... Kang and Herwig are clearly showing two different, unrelated devices. ... Kang does not show a power supply inside its USB hub, and all power is supplied from sources outside the device of Kang. ... The final Office Action has not cited clear and particular evidence of record in support of this motivation to combine Herwig, Flannery, Kang, and Tsai as is required by In re Dembiczak and In re Lee. The final Office Action cannot rely on common sense alone to support a rejection, as this is contrary to In re Zurko. ..." in the Brief on pages 16-18, the Examiner respectfully disagrees.

First, in contrary to the Appellant's statement, i.e., Kang and Herwig are clearly showing two different, unrelated devices, Kang and Herwig are clearly showing a related devices, such that USB Hubs. Moreover, it has been held that a prior art reference must either be in the field of Appellant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the Appellant was concerned, in order to be relied upon as a basis for rejection of the claimed invention. See *In re Oetiker*, 977 F.2d 1443, 24 USPQ2d 1443 (Fed. Cir. 1992). In this case, Kang and Herwig are in the field of Appellant's endeavor, USB system.

Second, even though the secondary reference Kang does not clearly states if the power source is enclosed in the housing, the primary reference Herwig clearly teaches said power supply is enclosed in said housing, and Kang clearly teaches two power sources, i.e., bus power and local power.

Third, the Appellant asserts that the final Office Action cannot rely on common sense alone to support a rejection, as this is contrary to *In re Zurko*. According to MPEP 2144.03 [R-1], it states that it would not be appropriate for the Examiner to take official notice of facts without citing a prior art reference where the facts asserted to be well known are not capable of instant and unquestionable demonstration as being well-known. However, in this case, the Examiner does not take official notice of facts without citing a

Art Unit: 2112

prior art reference. The claim rejection clearly cites Tsai reference for showing the facts asserted.

Moreover, the motivation for combining the primary reference with Tsai is an advantage of providing a compact and clean wiring in the housing, which should not be unreasonable to take the fact that it is desirable to make something better and simpler without the specific support documentary evidence. In fact, MPEP and/or *In re Zurko* does not specify the final Office Action cannot rely on common sense alone to support a rejection and/or a motivation.

Finally, the Appellant's argument fails to comply with 37 CFR 1.111(b) because they amount to a general allegation that the claims define a patentable invention without specifically pointing out how the language of the claims patentably distinguishes them from the references.

Thus, Appellant's argument for this point cannot be seen as persuasive.

In response to the Appellant's arguments with respect to "V. Claim 9 stands rejected under 35 USC §103(a) as being unpatentable over Herwig, Flannery, Kang, Tsai, and Decuir (U.S. 5,781,028 A). ... The Appellant respectfully submits that prima facie case of obviousness of claim 9 has not been established in the final Office Action. ..." in the Brief on pages 18-19, the Examiner respectfully disagrees.

In contrary to the Appellant's statement, all the rejections under 35 U.S.C. §103(a) in the final Office Action established a *prima facie* case of obviousness meeting the three basic criteria of the MPEP 2143.03. In this case, the Examiner has clearly pointed out rationale for appropriate combination of the references.

Furthermore, the Appellant's argument fails to comply with 37 CFR 1.111(b) because they amount to a general allegation that the claims define a patentable invention without specifically pointing out how the language of the claims patentably distinguishes them from the references.

Thus, Appellant's argument for this point cannot be seen as persuasive.

*In response to the Appellant's arguments with respect to "VI. Claim 10 stands rejected under 35 USC §103(a) as being unpatentable over Herwig, Flannery, Kang, Tsai, and Sanchez (U.S. 6,446,867). ... The Appellant respectfully submits that *prima facie* case of obviousness of claim 10 has not been established in the final Office Action. ..."* in the Brief on pages 19-20, the Examiner respectfully disagrees.

In contrary to the Appellant's statement, all the rejections under 35 U.S.C. §103(a) in the final Office Action established a *prima facie* case of obviousness meeting the three basic criteria of the MPEP 2143.03. In this case, the Examiner has clearly pointed out rationale for appropriate combination of the references.

Furthermore, the Appellant's argument fails to comply with 37 CFR 1.111(b) because they amount to a general allegation that the claims define a patentable invention without specifically pointing out how the language of the claims patentably distinguishes them from the references.

Thus, Appellant's argument for this point cannot be seen as persuasive.

*In response to the Appellant's arguments with respect to "VII. Claims 13 and 40 stand rejected under 35 USC §103(a) as being unpatentable over Herwig, Flannery, and Tsai. ... The final Office Action has not cited clear and particular evidence of record in support of this motivation to combine Herwig, Flannery, and Tsai as is required by *In re Dembiczak* and *In re Lee*. The final Office Action cannot rely on common sense alone to support a rejection, as this is contrary to *In re Zurko*. ..."* in the Brief on pages 20-21, the Examiner respectfully disagrees.

The Appellant asserts that the final Office Action cannot rely on common sense alone to support a rejection, as this is contrary to *In re Zurko*.

According to MPEP 2144.03 [R-1], it states that it would not be appropriate for the Examiner to take official notice of facts without citing a prior art reference where the facts asserted to be well known are not capable of instant and unquestionable demonstration as being well-known. However, in this case, the

Art Unit: 2112

Examiner does not take official notice of facts without citing a prior art reference. The claim rejection clearly cites Tsai reference for showing the facts asserted. Moreover, the motivation for combining the primary reference with Tsai is an advantage of providing a compact and clean wiring in the housing, which should not be unreasonable to take the fact that it is desirable to make something better and simpler without the specific support documentary evidence. In fact, MPEP and/or *In re Zurko* does not specify the final Office Action cannot rely on common sense alone to support a rejection and/or a motivation.

Further, the Appellant's argument fails to comply with 37 CFR 1.111(b) because they amount to a general allegation that the claims define a patentable invention without specifically pointing out how the language of the claims patentably distinguishes them from the references.

Thus, Appellant's argument for this point cannot be seen as persuasive.

*In response to the Appellant's arguments with respect to "VIII. Claim 14 stands rejected under 35 USC §103(a) as being unpatentable over Herwig, Flannery, Tsai, and Decuir. ... The Appellant respectfully submits that *prima facie* case of obviousness of claim 14 has not been established in the final Office Action. ..."* in the Brief on page 21, the Examiner respectfully disagrees.

In contrary to the Appellant's statement, all the rejections under 35 U.S.C. §103(a) in the final Office Action established a *prima facie* case of obviousness meeting the three basic criteria of the MPEP 2143.03. In this case, the Examiner has clearly pointed out rationale for appropriate combination of the references.

Furthermore, the Appellant's argument fails to comply with 37 CFR 1.111(b) because they amount to a general allegation that the claims define a patentable invention without specifically pointing out how the language of the claims patentably distinguishes them from the references.

Thus, Appellant's argument for this point cannot be seen as persuasive.

Art Unit: 2112

*In response to the Appellant's arguments with respect to "IX. Claim 15 stands rejected under 35 USC §103(a) as being unpatentable over Herwig, Flannery, Tsai, and Sanchez. ... The Appellant respectfully submits that *prima facie* case of obviousness of claim 15 has not been established in the final Office Action. ..."* in the Brief on pages 21 and 22, the Examiner respectfully disagrees.

In contrary to the Appellant's statement, all the rejections under 35 U.S.C. §103(a) in the final Office Action established a *prima facie* case of obviousness meeting the three basic criteria of the MPEP 2143.03. In this case, the Examiner has clearly pointed out rationale for appropriate combination of the references.

Furthermore, the Appellant's argument fails to comply with 37 CFR 1.111(b) because they amount to a general allegation that the claims define a patentable invention without specifically pointing out how the language of the claims patentably distinguishes them from the references.

Thus, Appellant's argument for this point cannot be seen as persuasive.

X. Claims 21 to 23 stand rejected under 35 USC §103(a) as being unpatentable over Herwig and Tsai.

*In response to the Appellant's arguments with respect to "X. Claims 21 and 23 stand rejected under 35 USC §103(a) as being unpatentable over Herwig, and Tsai. ... The final Office Action has not cited clear and particular evidence of record in support of this motivation to combine Herwig, and Tsai as is required by *In re Dembiczak* and *In re Lee*. The final Office Action cannot rely on common sense alone to support a rejection, as this is contrary to *In re Zurko*. ..."* in the Brief on pages 22-23, the Examiner respectfully disagrees.

The Appellant asserts that the final Office Action cannot rely on common sense alone to support a rejection, as this is contrary to *In re Zurko*.

According to MPEP 2144.03 [R-1], it states that it would not be appropriate for the Examiner to take official notice of facts without citing a prior art reference where the facts asserted to be well known are

Art Unit: 2112

not capable of instant and unquestionable demonstration as being well-known. However, in this case, the Examiner does not take official notice of facts without citing a prior art reference. The claim rejection clearly cites Tsai reference for showing the facts asserted. Moreover, the motivation for combining the primary reference with Tsai is an advantage of providing a compact and clean wiring in the housing, which should not be unreasonable to take the fact that it is desirable to make something better and simpler without the specific support documentary evidence. In fact, MPEP and/or *In re Zurko* does not specify the final Office Action cannot rely on common sense alone to support a rejection and/or a motivation. Further, the Appellant's argument fails to comply with 37 CFR 1.111(b) because they amount to a general allegation that the claims define a patentable invention without specifically pointing out how the language of the claims patentably distinguishes them from the references.

Thus, Appellant's argument for this point cannot be seen as persuasive.

In response to the Appellant's arguments with respect to "XI. Claim 26 stands rejected under 35 USC §103(a) as being unpatentable over Herwig, Tsai, and Decuir. ... The Appellant respectfully submits that prima facie case of obviousness of claim 26 has not been established in the final Office Action. ..." in the Brief on pages 23 and 24, the Examiner respectfully disagrees.

In contrary to the Appellant's statement, all the rejections under 35 U.S.C. §103(a) in the final Office Action established a *prima facie* case of obviousness meeting the three basic criteria of the MPEP 2143.03. In this case, the Examiner has clearly pointed out rationale for appropriate combination of the references.

Furthermore, the Appellant's argument fails to comply with 37 CFR 1.111(b) because they amount to a general allegation that the claims define a patentable invention without specifically pointing out how the language of the claims patentably distinguishes them from the references.

Thus, Appellant's argument for this point cannot be seen as persuasive.

In response to the Appellant's arguments with respect to "XII. Claim 27 stands rejected under 35 USC §103(a) as being unpatentable over Herwig, Tsai, and Sanchez. ... The Appellant respectfully submits that prima facie case of obviousness of claim 27 has not been established in the final Office Action. ..." in the Brief on page 24, the Examiner respectfully disagrees.

In contrary to the Appellant's statement, all the rejections under 35 U.S.C. §103(a) in the final Office Action established a *prima facie* case of obviousness meeting the three basic criteria of the MPEP 2143.03. In this case, the Examiner has clearly pointed out rationale for appropriate combination of the references.

Furthermore, the Appellant's argument fails to comply with 37 CFR 1.111(b) because they amount to a general allegation that the claims define a patentable invention without specifically pointing out how the language of the claims patentably distinguishes them from the references.

Thus, Appellant's argument for this point cannot be seen as persuasive.

In response to the Appellant's arguments with respect to "XIII. Claims 37 and 48 stand rejected under 35 USC §103(a) as being unpatentable over Herwig, Flannery, Urade, and Silverman et al. (U.S. 6,370,603 B1, Silverman). ... Silverman does not provide a motivation for modifying Herwig in view of Flannery and Urade. The final Office Action has not identified clear and particular evidence of a motivation in Silverman for the original modification of Herwig in view of Flannery and Urade discussed above in section III as is required by In re Dembiczak and In re Lee, and therefore there is no clear and particular evidence of a motivation to combine Herwig, Flannery, Urade, and Silverman. ..." in the Brief on pages 24-26, the Examiner respectfully disagrees.

In contrary to the Appellant's statement, the final Office Action provides a proper motivation on pages 18-19. Furthermore, the rationale for combining Silverman with Herwig, Flannery, Urade, i.e., providing an improved technique (i.e., providing an enablement of communications between devices

Art Unit: 2112

having disparity protocols, e.g., USB and Ethernet; See Abstract) for effecting digital communications between said downstream devices (i.e., digital devices) and systems using different communication protocols (See Silverman, col. 4, lines 10-13), is very specific to the technical description in Silverman, and is therefore the clear and particular evidence required by *In re Dembiczak*.

Furthermore, in contrary to the Appellant's statement, all the rejections under 35 U.S.C. §103(a) in the final Office Action established a *prima facie* case of obviousness meeting the three basic criteria of the MPEP 2143.03. In this case, the Examiner has clearly pointed out rationale for appropriate combination of the references in the final Office Action on pages 18-19.

Therefore, Appellant's argument on this point appears to be in error and should not be held as persuasive for patentability.

For the above reasons, it is believed that the rejections should be sustained.

Art Unit: 2112


Respectfully submitted,

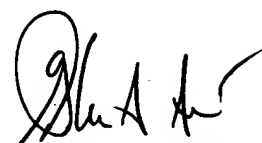
Christopher E. Lee
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